CLAIMS

What is claimed is:

1. A system that facilitates rendering data in an industrial automation environment, comprising:

a high-speed data collection component that collects data at a rate of at least 100 samples per second per tag;

an RTR^{m} component that indexes data;

a trend server that processes the collected data; and

a rendering component that seamlessly renders the processed data.

2. The system of claim 1, the high-speed data collection component comprising at least one programmable logic controller (PLC).

3. The system of claim 1, the high-speed data collection component comprising at least one "soft" programmable logic controller (PLC).

4. The system of claim 1, the high-speed data collection component samples data at a rate between 100 and 1000 samples per second per tag.

5. The system of claim 4, the high-speed data collection component samples data at a rate between 100 and 300 samples per second per tag.

6. The system of claim 4, the high-speed data collection component samples data at a rate between 300 and 500 samples per second per tag.

7. The system of claim 4, the high-speed data collection component samples data at a rate between 500 and 1000 samples per second per tag.

8. The system of claim 1, the trend server comprising a buffer that temporarily stores data.

9. The system of claim 8, the trend server comprising an artificial intelligence (A/I) component associated with the buffer that determines and/or infers whether data requires buffering.

10. The system of claim 9, the A/I component comprising implicitly and/or explicitly trained classifiers.

11. The system of claim 9, the A/I component facilitates dynamic adjustment of buffer size *via* proactive analysis of a data stream.

12. The system of claim 9, the A/I component facilitates dynamic adjustment of a sample rate.

13. The system of claim 9, the A/I component comprising at least one probabilistic analysis algorithm to determine and/or infer whether data requires buffering.

14. The system of claim 9, the A/I component comprising at least one prognostic analysis algorithm to determine and/or infer whether data requires buffering.

15. The system of claim 9, the A/I component comprising at least one utility-based analysis algorithm to determine and/or infer whether data requires buffering.

16. The system of claim 15, the at least one utility-based analysis algorithm assesses information associated with user preference-based cost-benefit analysis.

17. The system of claim 16, the preference-based cost-benefit analysis is based at least in part on a determination and/or inference regarding reconciliation of system resource expenditure with a desire for a high-resolution rendering of data.

18. The system of claim 9, the A/I component is operable to determine and/or infer priority of the data.

19. The system of claim 9, the A/I component employs a user profile to make inferences regarding rendering data to a user.

20. The system of claim 19, the A/I component employs historical user information to make inferences regarding rendering data to the user.

21. The system of claim 1, comprising a Human Machine Interface.

22. The system of claim 21, the Human Machine Interface comprising at least one of a fixed Human Machine Interface, a tethered portable Human Machine Interface, and a wireless Human Machine Interface.

23. The system of claim 1, comprising a high-speed time series data analysis component operably coupled to the trend server and the Human Machine Interface.

24. The system of claim 1, the RTR^m component provides performance gains that are directly proportional to the number of indexed data points.

25. A method that facilitates rendering data in an industrial automation environment, comprising:

collecting data at a high-resolution rate of at least 50 samples per second per tag;

processing high-resolution data;

employing a run-time data reduction (RTR^m) component to index high-resolution data; and

rendering high-resolution output data on a user interface.

26. The method of claim 25, the high-resolution data is collected *via* employing at least one programmable logic controller (PLC).

27. The method of claim 25, the high-resolution data is collected *via* employing at least one "soft" programmable logic controller (PLC).

28. The method of claim 25, the high-resolution data is collected at a rate of between 50 and 1000 samples per second per tag.

29. The method of claim 25, the high-resolution data is collected at a rate of between 50 and 300 samples per second per tag.

30. The method of claim 25, the high-resolution data is collected at a rate of between 300 and 500 samples per second per tag.

31. The method of claim 25, the high-resolution data is collected at a rate of between 500 and 1000 samples per second per tag.

32. The method of claim 25, the high-resolution data is processed *via* employing a trend server.

33. The method of claim 32, the processing of the high-resolution data is effectuated by at least one of batching the data and buffering the data.

34. The method of claim 32, the high-resolution data is buffered *via* employing a buffer associated with the trend server.

35. The method of claim 32, the high-resolution data is batched *via* employing the trend server.

36. The method of claim 32, further comprising employing an artificial intelligence component associated with the trend server to determine whether data requires buffering.

37. The method of claim 25, the high-resolution output data is rendered *via* employing at least one of a fixed Human Machine Interface, a tethered portable Human Machine Interface, and a wireless Human Machine Interface.

38. The method of claim 37, the high-resolution output data is rendered seamlessly.

39. The method of claim 37, the Human Machine Interface presents a scroll bar to permit a user to seamlessly view historical data.

40. The method of claim 25, wherein RTR^m performance efficiency increases with the number of data points indexed.

41. A method that facilitates rendering data in an industrial automation environment, comprising:

means for collecting high-resolution data;

means for processing high-resolution data;

means for reducing run-time of high resolution data; and

means for rendering high-resolution data on a user interface.

42. The method of claim 41, the means for collecting high-resolution data comprising at least one of a hardware means and a software means.

43. The method of claim 41, the means for collecting high-resolution data collects data at a rate of at least 50 samples per second per tag.

44. The method of claim 43, the means for collecting high-resolution data collects data at a rate between 50 and 1000 samples per second per tag.

45. The method of claim 44, the means for collecting high-resolution data collects data at a rate of approximately 200 samples per second per tag.

46. The method of claim 41, the means for processing high-resolution data further comprising at least one of means for batching the high-resolution data and means for buffering the high-resolution data.

47. The method of claim 41, the means for processing high-resolution data comprising means for sampling and indexing the high-resolution data.

48. The method of claim 41, the means for rendering high-resolution data comprising at least one of a fixed means, a tethered portable means, and a wireless means.

49. The method of claim 41, the means for rendering high-resolution data comprising means for scrolling through historical data.

50. The method of claim 41, the means for rendering high-resolution data comprising means for presenting a seamless display to a user.